UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

SUBJECT:	CLEAN AIR ACT INSPECTION REPORT Maeder Brothers Quality Wood Pellets, Weidman, MI
FROM:	Valeria Apolinario, Environmental Engineer AECAB (MN/OH)
THRU:	Brian Dickens, Section Supervisor AECAB (MN/OH)
TO:	File

BASIC INFORMATION

Facility Name: Maeder Brothers Quality Wood Pellets, Weidman, MI

Facility Location: 5180 W. Weidman Rd, Weidman, MI 48893

Date of Inspection: July 20, 2022

EPA Inspector(s):
1. Valeria Apolinario, Environmental Engineer
2. David Sutlin, Environmental Engineer

Other Attendees:
1. John Maeder, Owner
2. Christi Densmore, Secretary

Contact Email Address: christi@maederwoodpellets.com

Purpose of Inspection: The facility is located within the exterior boundaries of the Saginaw Chippewa Tribe of Michigan and was issued a Part 49 Minor NSR Permit by U.S. EPA Region V. At this inspection, U.S. EPA conducted the first Full Compliance Evaluation for the facility.

Facility Type: Wood Pellet Manufacturer

Regulations Central to Inspection:

The facility's Air Quality Construction Permit (2018-49MISC-002) lists the following requirements:

Emission Limitations and Standards

- The facility is required to comply with
    - Hourly emission limits of CO, PM (including separate limits for PM_{10} and $PM_{2.5}$), VOC, Formaldehyde and Acrolein for the cyclone portion of the dryer.
    - A facility-wide yearly emission limit of CO and VOC.
    - A yearly emission limit of PM (including separate limits for PM_{10} and $PM_{2.5}$) for the dryer.
    - A PM emission limit for the burner portion of the dryer.
    - A PM emission limit for hammermill 2.
    - An hourly emission limit of PM for pellet storage.
    - The facility has a 10% opacity, as a 6-minute average, limit for the second hammermill.
    - The facility has a 20% opacity, as a 6-minute average, limit for all other emission units.
- The facility is required to comply with an operational limit of 4,500 hours per year based on a 12-month rolling time period.
- The facility is required to comply with a process limit of no more than 6.0 oven-dried tons per hour of hardwood through the dryer.
- The facility is required to combust only dried hardwood in the burner portion of the dryer and dry only hardwood in the dryer portion of the dryer.
- The maximum design heat input capacity of the burner portion of the dryer is required to not exceed 7.2 MMBtu per hour on a fuel heat input basis, as certified by the equipment manufacturer.
- The dryer is to only be operated if its cyclone is installed, maintained, and operated in accordance with an EPA approved malfunction and abatement plan (MAP).
- The temperature of the inlet of the dryer should not exceed 850 degrees Fahrenheit.
- The facility is required to limit exhausting from the dryer bypass stack to no more than 300 hours per year.
- The second hammermill is to only be operated if the cartridge filter is installed, maintained, and operated in accordance with an EPA approved MAP.
- All emission units and associated equipment authorized by the permit are required to be maintained in good working order and operated properly.
- At all times, including startup, shutdown, and malfunction, the facility should maintain and operate all sources, including associated air pollution control equipment, consistent with good air pollution control practices for minimizing emissions.

Monitoring

- The facility is required to monitor and record the hours of operation for the dryer on a monthly and a 12-month rolling time period as determined at the end of each calendar month.
- The facility is required to monitor and record the oven-dried tons per hour of dried hardwood chips processed in the dryer.
- The facility is required to check the cyclone for any visible emissions once each day of operation during daylight hours.
- The facility is required to install, calibrate, maintain, and operate a device to monitor the temperature at the inlet of the dryer. The temperature at the inlet of the dryer should be recorded twice per shift.
- The facility is required to monitor and record the startup and shutdown of the dryer, which should include the date, times of startup/shutdown, and the time the dryer portion was started up/shut down.
- Visible emissions daily observations are required to be taken at hammermill 1, the dryer cyclone, the dryer bypass stack, hammermill 2, storage silo, screener 1, screener 2, pellet mill 1, pellet mill 2, cooler, and bagging emission units.
- The facility is required to also conduct visible emission observations during startup and shutdown.
- The facility is required to calculate the monthly and previous 12-month CO, PM, PM_{10} $PM_{2.5}$, and VOC emissions of the facility in tons per year.
- The facility is required to install, calibrate, maintain, and operate a device to monitor the hours of operation for the dryer.
- The MAP for the dryer and cyclone should specify a complete preventative maintenance program, including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that should be inspected, the frequency of inspections or repairs, and identification of major replacement parts to be maintained in inventory. The MAP should identify variables to monitored to detect a malfunction or failure, the normal operating range of these variables, a description of monitoring methods, and a description of corrective procedures to be taken during a malfunction or failure to achieve compliance with applicable emission limits.
- The facility should amend the dryer MAP if the MAP fails to address or inadequately address a malfunction; this revised MAP should be submitted to EPA.
- The facility should also submit a plan to EPA for minimizing emissions during startup and shutdown of the dryer.
- Upon request, the facility should test for PM, CO, and VOC emissions according to applicable EPA methods.

Recordkeeping and Reporting

- The facility is required to maintain a file of all records required by this permit for at least five years.
- The facility is required to record the time and date of each visible emission inspection and whether any visible emissions were observed.

- The facility is required to document periods of non-operation of the control equipment.
- If performance testing is conducted, records performance test data and results are to be maintained.
- The facility is required to maintain records of excess emissions reports, calibration and maintenance, and standard operation and maintenance procedures for each emission unit.
- The facility is required to maintain records of throughput calculations in tons per year on a monthly basis of oven-dried hardwood and hours of operation of the dryer.
- The facility is required to report deviations from any permit requirements within 30 days of the deviation.
- The facility is required to submit a report of oven dried tons per year of hardwood throughput and the hours of operation of the facility annually.

The permit also defines the following emission units:

1. Hammermill 1- a dry hammermill used to reduce the size of the wood material prior to drying.
2. Dryer- a 7.2 MMBtu per hour hardwood burner with a 6 oven-dried tons per hour rotary dryer that will dry the hardwood chips.
3. Hammermill 2- a dry hammermill used to pulverize the wood chips, which is ***controlled by a cartridge filter.***
4. Screener 1 - a screen that separates fines from material to be pelletized. Fines are returned via auger to storage bin for dryer burner.
5. Pellet mill 1- the pellet mill extrudes the wood pellets from the wood chips, which is ***enclosed in a building.***
6. Pellet mill 2- the pellet mill extrudes the wood pellets from the wood chips, which is ***enclosed in a building.***
7. Cooler- a cooler which cools the wood pellets after extrusion, which is ***enclosed in a building.***
8. Storage silo- a pellet storage system consisting of screens, conveyors, and a storage silo vented to the atmosphere.
9. Screener 2- a screener that removes finer particles before bagging. The pellets are sent to the bagger and the fines are sent via auger back into the system.
10. Bagging- the bagging operation bags the chips after they are cooled, which is ***enclosed in a building.***

Arrival Time: 9:00 AM
Departure Time: 10:57 AM

Inspection Type:
☒ Unannounced Inspection
☐ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials

☒ Stated authority and purpose of inspection
☒ Provided Small Business Resource Information Sheet
☒ Provided CBI warning to facility

The following information was obtained verbally from John Maeder and Christi Densmore unless otherwise noted.

Process Description:
Maeder Brothers Quality Wood Pellets (Maeder) produces wood pellets from hardwood wood chips from its own and other local sawmills. The hardwood is fed into the first dry hammermill, where the wood chips are reduced to a thickness of approximately 3/8 inches. These chips are stored for three days for natural drying to occur. Afterwards, the chips are fed into the dryer to be dried of any lingering moisture. A second dry hammermill is then used to pulverize the chips into sawdust. Before the sawdust is pneumatically elevated to the pellet mill, a screen is used to separate the fines out. These fines are used as combustible material for the dryer and are stored in a silo controlled by a baghouse.

The facility operates two pellet mills where the sawdust is extruded into a pelletized form. A cooler reduces the temperature of the wood pellets after they are extruded from the pellet mills. The pellets are then collected in a storage bin for dry storage and eventually augured to the bagging area within the facility to be bagged and shipped out to consumers.

Staff Interview:
- The facility operates from 8am-6pm, five days a week, and has six employees.
- John Maeder stated during the opening conference that hardwood and mixtures of hardwood and softwood could enter the dryer. Christi Densmore clarified to EPA afterward that only hardwood is dried in the dryer.
- Only wooden fines are combusted to fuel the dryer.
- The cyclone controlling for air emissions at the dryer is inspected monthly.
- Personnel did not recall any stack testing conducted at the facility.
- Personnel stated that maintenance was being conducted in the facility and that the dryer had finished operating for the day.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:
- EPA reviewed paper copies of data taken daily when the dryer is operating, which includes the inlet temperature of the dryer. Of the documents reviewed, EPA recorded the following times and inlet temperatures from December 31, 2021.
    - 7am – 779 °F
    - 8am – 808 °F
    - 9am – 854 °F
    - 10am – 764 °F

    - 11am – 745 °F
- Fines from screening and bagging operations are stored in an enclosure open on one side. Fines were seen escaping from the enclosure, as recorded in Item 1 of Appendix A.
- The cartridge filter for the second hammermill had been removed; in its place remained an enclosure for air circulation, pictured in Item 2 of Appendix A.
- One of the baghouses at the facility, pictured in Items 4-6 of Appendix A, had its hopper disconnected from the storage bin that collected the fines. Personnel stated that this was likely due to maintenance and that this baghouse was not originally within the permit for the facility.
    - In a phone call on September 12, 2022, Christi Densmore further explained that this baghouse controlled for fines from the second hammermill. The baghouse is currently undergoing an investigation as a potential cause for fires and may be removed from the facility.

Photos and/or Videos: were taken during the inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:
As this was the facility's first Full Compliance Evaluation, U.S. EPA requested the following documents since the effective date of the facility's permit, August 11, 2018, to ensure all permit requirements were being met:

- Monthly 12-month rolling CO, VOC, PM, PM10, and PM2.5 emission calculations for the facility
- Monthly 12-month rolling PM, PM10, and PM2.5 emission calculations for the dryer
- Any calculations or testing conducted that ensure hourly limits are met:
    - CO, VOC, PM10, PM2.5, formaldehyde, and acrolein emissions from the cyclone portion of the dryer
    - PM emissions from the cyclone portion of dryer and pellet storage
    - PM emissions from the burner portion of the dryer (bypass stack)
    - PM emissions from hammermill 2
- Monthly 12-month rolling total hours of operation for the dryer
- Monthly Visible Emission observations, including those done during start up and shut down of the dryer
- Monthly input rate of hardwood
- Records of the inlet temperature of the dryer (only for the first of each month, or next business day, except for the first record from August 2018)
- Yearly report of oven dried tons per year of hardwood throughput and hours of operation of the facility
- Dryer heat input capacity (in MMBTU) stated by the manufacturer in guidelines, operation manual, or other documents
- Any records of maintenance and calibration done on the temperature monitor for the dryer

- Any records of periods of non-operation of the cyclone or baghouses
- Any reports of excess emissions and deviations from permit requirements
- Standard operation and maintenance procedures for each emission unit
- The facility's Malfunction and Abatement Plan, specifically a plan that contains information referenced in the permit at Section II (B)(1)(i).
- A picture of the dryer and hammermill 2 area, including ductwork to air pollution controls, to ensure emissions are routed properly as the facility was undergoing maintenance during the inspection.

Concerns: US EPA reported concerns to the facility about the open storage of fines from the bagging process, the removal of the cartridge collector from the second hammermill, and the possibility of softwood being dried in the dryer. Personnel stated that the vast majority (greater than 99%) of what is dried is hardwood.

DIGITAL SIGNATURES

Report Author: VALERIA APOLINARIO Digitally signed by VALERIA APOLINARIO Date: 2022.09.16 09:51:06 -05'00'

Section Supervisor: Brian Dickens Digitally signed by Brian Dickens Date: 2022.09.16 10:18:51 -05'00'

APPENDICES AND ATTACHMENTS

1. Appendix A: Digital Image Log

Facility Name: Maeder Brothers Quality Wood Pellets
Facility Location: 5180 W. Weidman Rd, Weidman, MI 48893
Date of Inspection: July 20, 2022

APPENDIX A: DIGITAL IMAGE LOG

1. **Inspector Name:** David Sutlin	2. **Archival Record Location:** Region 5 Electronic Records Center

Number	File Name	Date and Time (incl. Time zone and DST)	Description of Image
1	MVI_0148.MP4	7/20/2022 8:15	Video of the collection of fines from the bagging process.
2	IMG_0149.JPG	2022:07:20 08:25:53	Hammermill 2 is pictured on the right. The blue box on the left is the enclosure for air circulation that replaced the dust collector. Pellet mill and bagging operations occur in the building on the left.
3	IMG_0150.JPG	2022:07:20 08:33:46	Ductwork that connects to baghouse for Hammermill 2. On the left is the stack from the cyclone that controls emissions from the dryer.
4	IMG_0151.JPG	2022:07:20 08:36:06	Baghouse for control of fines from Hammermill 2.
5	IMG_0152.JPG	2022:07:20 08:36:23	Open duct from baghouse hopper to storage for fines due to maintenance.
6	IMG_0153.JPG	2022:07:20 08:36:37	Additional photo of baghouse for control of fines from Hammermill 2.